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**Proceedings of the Maritimes Region Science Advisory Process on the Assessment of
Georges and Browns Bank Scallop**

1 May 2013

**Bedford Institute of Oceanography
Dartmouth, NS**

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Foreword

The purpose of these Proceedings is to document the activities and key discussions of the meeting. The Proceedings may include research recommendations, uncertainties, and the rationale for decisions made during the meeting. Proceedings may also document when data, analyses or interpretations were reviewed and rejected on scientific grounds, including the reason(s) for rejection. As such, interpretations and opinions presented in this report individually may be factually incorrect or misleading, but are included to record as faithfully as possible what was considered at the meeting. No statements are to be taken as reflecting the conclusions of the meeting unless they are clearly identified as such. Moreover, further review may result in a change of conclusions where additional information was identified as relevant to the topics being considered, but not available in the timeframe of the meeting. In the rare case when there are formal dissenting views, these are also archived as Annexes to the Proceedings.

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SUMMARY

A Maritimes Science Advisory Process to assess the status of the scallop stocks on Georges and Browns Bank was held May 1, 2013, at the Bedford Institute of Oceanography in Dartmouth, Nova Scotia. Participants included Department of Fisheries and Oceans (DFO) Science Branch and Resource Management Division, fishing industry, aboriginal organization representatives, and invited reviewers. The assessment and advice presented at this meeting will be used in the management of the offshore scallop fishery on Georges and Browns Bank.

Compte rendu de la réunion du Processus consultatif scientifique de la Région des Maritimes au sujet de l'évaluation du stock de pétoncle du banc de Georges et du banc de Browns

SOMMAIRE

Un processus consultatif scientifique de la Région des Maritimes pour l'évaluation de l'état du stock de pétoncle du banc de Georges et du banc de Browns a été tenu le 1er mai 2013 à l'Institut océanographique de Bedford, à Dartmouth, en Nouvelle-Écosse. Parmi les participants, on retrouvait des représentants de la Direction des sciences et de la Division de la gestion des ressources du ministère des Pêches et des Océans (MPO), ainsi que de l'industrie de la pêche, des organismes autochtones et des examinateurs invités. L'évaluation et les conseils issus de cette réunion seront appliqués à la gestion de la pêche hauturière du pétoncle sur le banc de Georges et le banc de Browns.

INTRODUCTION

Tara McIntyre chaired the meeting and began with a short introduction on the procedures with respect to the meeting. The Terms of Reference (Appendix 1) and the agenda (Appendix 2) were reviewed, and a round of introductions took place for those in attendance (Appendix 3).

The objectives of the meeting were:

- To assess the status of Georges and Browns Bank scallop stocks as of the end of 2012.
- Evaluate the consequences of different harvest levels during the 2013 fishery on stock abundance and exploitation rate.

PRESENTATION OF GEORGES BANK STOCK STATUS

Presenter: Brad Hubley

Rapporteur: Leslie Nasmith

In 2012 the offshore scallop fleet on Georges Bank landed 4001t. To date in 2013 they have landed 930t of a 4000t interm total allowable catch (TAC). Effort in the 2012 fishery was lower than in the previous year and CPUE was slightly higher.

The main survey on Georges Bank takes place in August. It is a stratified random survey with strata based on historic abundance of scallops. In the 2012 survey there was a high abundance of commercial sized and recruit sized scallops on the north of the Bank. There is a strong condition factor pattern in relation to bottom temperature seen on the bank. Condition factor in 2012 increased compared to 2011 and temperature also increased.

New von Bertalanffy growth parameters are used in this assessment based on scallop samples from Georges Bank. This was verified with independent data.

New age parameters from the ageing program led to a redefinition of the size range of a 'recruit' scallop from 75-95 mm to a range of 85-95 mm. This change in size of recruits changes the recruit index of abundance and estimated biomass.

It was asked if the new growth curve applied to other large year classes. The new growth curve was applied to the entire time series. The effect is proportionately dependent on how the scallop grew; recent growth might not represent the norm. This will be further explored to determine if there are spatial/temporal differences in growth.

As a follow up it was asked whether or not the growth parameters could change from year to year. This will be looked at but probably will not change. The new parameters that have been applied take variations in growth over time into effect. There are also plans to go back and look at older shells and age them for verification.

Continuing with the presentation it was noted that the survey biomass for commercial size scallops has increased while the biomass of recruits has decreased. New data causes estimates of q (catchability) to be lower and biomass estimates to be higher. This has an impact on the reference point values. However, regardless of which data/methods are used to calculate the reference points there is a high probability the stock is in the healthy zone. The prediction from the model for 2013 is an increase in biomass.

The comment was made that a thorough discussion of how reference points are calculated is necessary if growth parameters are always going to be to be changing. It was noted that this is a complicated issue everywhere.

It was asked why the error in the prediction of biomass is bigger in the new growth model. It was explained that a higher biomass has higher error associated with it.

Discussion of Georges Bank Presentation

It was noted that changes to the growth parameters in the model benefitted the model by increasing the range in the cautious zone.

It was asked if there is bycatch data from the survey. Bycatch data is not collected on the survey due to lack of time and people to collect the data. There is observer coverage in the fishery that is used to estimate bycatch.

It was noted that the model projections in the past have overestimated the biomass. It was asked if there is an expectation that the projection for 2013 will also be an overestimate. It was stated that even with the new growth model there is a tendency to over predict because growth does not occur as expected. Recent growth has been slower than expected.

It was noted that there have been changes in growth, that the meats are bigger at smaller shell size. It was clarified that condition (weight) responds quicker to shell growth. Condition factor is the condition at the present time and shell growth is reflective of past conditions.

It was asked if there have been shifts in maturity. The scallops mature at an early age. Changes in growth are a function of recruitment events, environmental factors, etc. The allocation of energy to meat or gonad cannot be determined with the available data.

It was asked if there is any age validation. The validation is done with shell height modes. There has not been an isotope analysis for validation. A reference collection is being created and other aging methods are being used to validate.

PRESENTATION OF BROWNS BANK STOCK STATUS

Presenter: Brad Hubley

Rapporteur: Leslie Nasmith

In 2012 the offshore scallop fleet on Browns Bank landed 475t of a 500t TAC. To date in 2013 they have landed 620t of a 750 interm TAC. It was noted that catch was variable. Effort in the 2012 fishery was lower than in the previous year as well as catch per unit effort (CPUE).

A comment was made by a meeting participant that the CPUE in the working paper is not quite right. It does not seem to agree with other data provided; likely an underestimate. It was noted that this would be reviewed.

The survey on Browns Bank is a random stratified survey with strata based on historic CPUE. This is a more efficient survey design rather than using strata based on bottom type.

It was asked if the definition of recruit size has been changed for this stock as was done for the Georges Bank stock. It has not changed. The collection of growth data on Browns Bank has only just begun. This will be examined when the necessary data to do so is available.

The survey abundance of commercial sized scallops is above the long term median. Recruit sized scallops have decreased below long term median. Age data exists for a few samples from recent years. Data is not different from older data that has been used to date in the model therefore there is no change in growth parameters.

The model predictions for 2013 show a decrease in biomass near the long term median. The performance of the model in recent years is good.

It was asked if the biomass prediction table is in working paper. It was commented that it will be added.

Discussion of Browns Bank Presentation

It was asked if the lack of variation in old aged samples was expected. The age data used for Browns Bank is old data not collected by this project team. It is unknown why there are such differences between the old and new data and it was noted that age data is continuing to be collected and validation will also be conducted.

A comment was made that the advice provided for the Georges Bank stock is logical considering the resolution. However, on Browns Bank there is a decrease in biomass, decrease in recruitment but the TAC was increased. The model is still overestimating biomass so it was questioned as to why the TAC was increased. It was clarified that the increase in TAC is a management decision based on Science advice along with other factors. It was also noted that the survey data and model prediction were not available when the interim TAC was set.

It was commented that the decision table for Browns Bank does not make sense based on the Science advice. It was clarified that the information in the table is not a decision. It summarizes within the context of the model the impact of range of catches. The interim TAC is not a result of the assessment process. If a request for an increase in TAC was made, it would be evaluated against the advice from the table along with consideration of many other factors. It was noted that there is greater uncertainty on Browns compared to Georges. It was asked if that uncertainty is taken into account. It was suggested that maybe advice should be provided earlier in the year so TAC is based on up-to-date Science advice.

REVIEW OF THE SCIENCE ADVISORY REPORT

It was noted that the Precautionary Approach reference points that have been established in the past are documented in Marine Stewardship Council (MSC) documents and in the integrated fisheries management plan (IFMP). The industry stated they are not comfortable with changing reference point values at this stage. There is a willingness to review them at a regular frequency, not annually.

It was stated that Fisheries Management would raise the methodology in a request for a framework review. Reference points are relative to biomass so if the understanding of biomass changes then the reference points should also change. The methodology for calculating the reference points is fixed but the values will change as they are based on biomass.

It was asked if every year a year will be added to the historic time series or will there be a set reference year range. Currently all years are included in the working paper but it can be changed to a set range of years. The recalculation will be done with a set range of years for the research document.

It was noted that the uncertainty stated in the Sources of Uncertainty section is not stated with respect to how the abundance is affected and therefore how the advice is affected. Will abundance be higher or lower? How does this affect how we interpret the decision table? How is catch rate index a source of uncertainty? It was agreed that the statement in that section would not be a source of uncertainty with respect to the advice provided. There is proportionality with CPUE. However, it was noted that growth and recruitment changes should be addressed as well as the uncertainty in condition. The need to include wording with respect to changes made related to natural mortality was also noted.

The meeting concluded with consensus on the content of the Science Advisory Report and consensus that the working paper becomes a CSAS Research Document. Industry members acknowledged and commended the Science team for their efforts in preparation and presentation of the assessment.

APPENDIX 1. LIST OF PARTICIPANTS

Assessment of Georges and Browns Banks Scallop
Regional Peer Review – Maritimes Region

1 May 2013

Bedford Institute of Oceanography
Dartmouth, Nova Scotia

PARTICIPANTS

| Participant | Affiliation |
|------------------------|--|
| Brading, Josh | DFO Maritimes / Population Ecology |
| Cassista-Da Ros, Manon | DFO Maritimes / Population Ecology |
| Chandler, Alan | NS Dept. Fisheries & Aquaculture (NSDFA) |
| Claytor, Ross | DFO Maritimes / Population Ecology |
| Couture, John | Unama'ki Institute of Natural Resources (UINR) |
| Despres, Noel | Comeau's Sea Foods Limited |
| Francis, Cory | Confederacy of Mainland Mi'kmaq (CMM) |
| Glass, Amy | DFO Maritimes / Population Ecology |
| Hubley, Brad | DFO Maritimes / Population Ecology |
| Hurley, Peter | DFO Maritimes / Population Ecology |
| McIntyre, Tara | DFO Maritimes / Population Ecology |
| Mosher, Jim | Clearwater Seafoods |
| Nasmith, Leslie | DFO Maritimes / Population Ecology |
| Penney, Christine | Clearwater Seafoods |
| Reeves, Alan | DFO Maritimes / Population Ecology |
| Robert, Ginette | Seafood Producers Assn of NS (SPANS) |
| Russell, Dean | Ocean Choice International |
| Sarty, Matt | Clearwater Seafoods |
| Simpson, Greg | Mersey Seafoods Ltd. |
| Smith, Stephen | DFO Maritimes / Population Ecology |
| Stevens, Greg | DFO Maritimes / Resource Management |
| Stirling, Roger | Seafood Producers Assn of NS (SPANS) |
| Sullivan, Loyola | Ocean Choice International Inc. |
| Zisseron, Ben | DFO Maritimes / Population Ecology |

APPENDIX 2. TERMS OF REFERENCE

Assessment of Georges and Browns Bank Scallop
Regional Peer Review - Maritimes Region

May 1, 2013

Bedford Institute of Oceanography
Dartmouth, Nova Scotia

Chairperson: Tara McIntyre

TERMS OF REFERENCE

Context

In support of the fishery for Georges (SFA 27) and Browns (SFA 26) Bank scallop, DFO Maritimes Fisheries and Aquaculture Management Branch has asked Science Branch for an assessment of resource status and the consequences of various harvest levels for the coming fishing season. The current meeting is a scientific review of the assessment and projections undertaken in support of the 2013 fishery.

Objectives

- Assess the status of Georges and Browns Bank scallop stocks as of the end of 2012.
- Evaluate the consequences of different harvest levels during the 2013 fishery on stock abundance and exploitation rate.

Expected Publications

- Science Advisory Report
- Proceedings
- Research Document

Participation

- DFO Science
- DFO Fisheries & Aquaculture Management
- Aboriginal communities / organizations
- Provincial (Nova Scotia and New Brunswick) governments
- Industry

APPENDIX 3. DRAFT AGENDA

Assessment of Georges and Browns Bank Scallop
Regional Peer Review – Maritimes Region

1 May 2013

Lewis King Boardroom
Bedford Institute of Oceanography
Dartmouth, Nova Scotia

Chairperson: Tara McIntyre

DRAFT AGENDA

1 May 2013 – Wednesday

| | |
|-------------|--------------------------------------|
| 09:00-09:15 | Introduction |
| 09:15-09:45 | Presentation of Georges Bank Scallop |
| 09:45-10:00 | Comments from Reviewers |
| 10:00-10:15 | Break |
| 10:15-10:45 | Presentation of Browns Bank Scallop |
| 10:45-11:15 | Comments from Reviewers |
| 11:15-12:00 | Discussion |
| 12:00-13:00 | Lunch (not provided) |
| 13:00-13:30 | Discussion continued |
| 13:30-14:30 | Review of Science Advisory Report |
| 14:30-14:45 | Break |
| 14:45-16:00 | Review of Science Advisory Report |